

PATENT ABSTRACTS OF JAPAN

(11)Publication number : **05-326357**

(43)Date of publication of application : **10.12.1993**

(51)Int.Cl.

H01L 21/027
H01L 21/3205
H01L 21/90

(21)Application number : **04-130876**

(71)Applicant : **NIPPON TELEGR & TELEPH
CORP <NTT>**

(22)Date of filing : **22.05.1992**

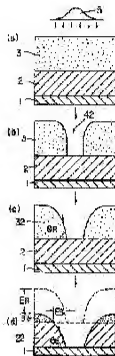
(72)Inventor : **MIMURA YOSHIKI
AOYAMA SHINJI
KIMIZUKA MASAKATSU**

(54) METHOD FOR FORMING CONTACT HOLE

(57)Abstract:

PURPOSE: To prevent that a resist film is reduced and that the controllability of the thermal deformation of a resist pattern becomes bad by a method wherein the title method is provided with the following: a press wherein an exposure operation is performed to the out-of-focus position and, in addition, an exposure operation and a developing operation are performed to the position of a focal point; and a process wherein UV rays are irradiated under a prescribed condition.

CONSTITUTION: A out-of-focus exposure operation which is provided with a light intensity distribution 5 is performed only to a part in which a contact hole is former in a substrate, to be treated, which has been coated with a photoresist film 3 on a wafer which has been covered with an interlayer insulating film 2 on a semiconductor substrate 1. After that, a contact-hole pattern is exposed and developed; a contact-hole resist pattern 42 can be obtained without reducing the resist film. Then, before the interlayer insulating film 2 is RIE-treated, a resist taper angle is controlled and the smoothing treatment of a sidewall is executed under a prescribed UV curing condition; the taper working operation of the interlayer insulating film 2 is executed surely and with good controllability. Thereby, the contact hole can be adjusted



with good accuracy, and a sidewall angle can be adjusted to an arbitray angle within a range of about 50 to 85°.